



# NATA ACCREDITED LABORATORY

National Association of Testing Authorities, Australia

(ABN 59 004 379 748)

has accredited

## HRL Technology Group Pty Ltd Non-Destructive Testing

following demonstration of its technical competence to operate in accordance with

**ISO/IEC 17025**

This facility is accredited for the tests shown on the *Scope of Accreditation* issued by NATA

**Jennifer Evans**

Chief Executive Officer

Date of issue: 06 February 2020

Date of accreditation: 21 November 1995

Accreditation number: 561

Site number: 11459



National Association of Testing Authorities, Australia  
**SCOPE OF ACCREDITATION**

**HRL Technology Group Pty Ltd**

**NON-DESTRUCTIVE TESTING**

| Accreditation Number: 561 | Site Number: 11459 |

**Address Details:**

The Gippsland Enterprise Centre  
50 Northways Road  
CHURCHILL, VIC 3842  
AUSTRALIA

**Website:** [www.hrlt.com.au](http://www.hrlt.com.au)

**Contact Details:**

Mr Matthew Baxter  
+61(03) 51321562  
[mbaxter@hrl.com.au](mailto:mbaxter@hrl.com.au)

**Availability:** Services available to external clients

Note: Not all of the columns of the scope of accreditation displayed include data.

The only data displayed is that deemed relevant and necessary for the clear description of the activities and services covered by the scope of accreditation.

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**ISO/IEC 17025 (2017)**  
**Infrastructure and Asset Integrity**

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATION/RANGE
Non-destructive testing (NDT) - Material properties and internal integrity	Bonded metals; Rolled or wrought steel products;	Ultrasonic detection and characterisation of discontinuities	A-scan capability		
	Welded joints - Ferritic materials		A-scan capability; Automated phased array		



## National Association of Testing Authorities, Australia SCOPE OF ACCREDITATION

		Ultrasonic detection and characterisation of discontinuities	capability (PAUT); Manual phased array capability (PAUT);		
Non-destructive testing (NDT) - Product profile and corrosion mapping	Castings; Forgings; Metallic components; Metallic piping; Metallic plate; Metallic tubes - Ferromagnetic materials; Metallic tubes - Non-ferromagnetic materials;	Ultrasonic material profiling and characterisation of material loss	A-scan - Manual; Manual phased array capability (PAUT);		
		Ultrasonic material thickness - Spot or grid measurements	A-scan - Manual; Thickness meter;		
Non-destructive testing (NDT) - Surface techniques	Metallic surfaces	Magnetic particle detection of discontinuities	AC magnetic flow; Coil;		
	Metallic surfaces; Non-metallic surfaces;	Dye penetrant detection of discontinuities	Solvent removable; Water washable;		

| Accreditation Number: 561 | Site Number: 11459 | Printed on : 06-Feb-2020

----- END OF SCOPE -----



# NATA ACCREDITED LABORATORY

**National Association of Testing Authorities, Australia**

(ABN 59 004 379 748)

has accredited

**HRL Technology Group Pty Ltd  
Mechanical Testing**

following demonstration of its technical competence to operate in accordance with

**ISO/IEC 17025**

This facility is accredited for the tests shown on the *Scope of Accreditation* issued by NATA

**Jennifer Evans**  
Chief Executive Officer

Date of issue: 04 September 2019

Date of accreditation: 16 December 1965

Accreditation number: 561

Corporate Site Number: 554



# National Association of Testing Authorities, Australia

## SCOPE OF ACCREDITATION

### HRL Technology Group Pty Ltd

#### MECHANICAL TESTING

| Accreditation Number: 561 | Site Number: 554 |

**Address Details:**

Level 1, Unit 4/677 Springvale Road  
MULGRAVE, VIC 3170  
AUSTRALIA

**Website:** [www.hrlt.com.au](http://www.hrlt.com.au)

**Contact Details:**

Mr Trevor Layzell  
+61(03) 95659854  
[tlayzell@hrl.com.au](mailto:tlayzell@hrl.com.au)

**Availability:** Services available to external clients

**Note:** Not all of the columns of the scope of accreditation displayed include data.

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#### ISO/IEC 17025 (2017) Manufactured Goods

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATION/RANGE
Material performance evaluation of metal products	Tubing/piping	Flattening properties	Not applicable	AS 11163:1991	
	Springs	Compression	Not applicable		in the range 0.1N to 500 kN
	Welded test specimens	Nick-break fracture	Macroscopic examination; Visual examination;	AS 2205.4.1	
		Tensile properties	All-weld-metal tensile; Tensile tests with control of strain rate, including yield stress and proof stress;	AS 1391, ASTM A370, E8	0.4 N to 500 kN
		Tensile properties at elevated temperatures	All-weld-metal tensile; Tensile tests with control of strain rate,	AS 2291	0.4 N to 500 kN at elevated temperatures in the range ambient to



## National Association of Testing Authorities, Australia SCOPE OF ACCREDITATION

			including yield stress and proof stress;		600°C
		Hardness	Brinell; Rockwell - Scale B; Rockwell - Scale C; Vickers;	AS 1816.1 AS 1815.1 AS 1817.1	Brinell - in the range 4.9 to 29.4 kN Vickers - in the range 9.8 to 980 N
		Fillet-break fracture	Macroscopic examination; Visual examination;	AS 2205.4.2	
		Macroscopic examination	Macroscopic examination	AS 2205.5.1	
		Fracture toughness	Crack tip opening displacement	BS 7448	Plane strain fracture toughness tests and crack opening displacement tests in bending mode, in the temperature range - 40°C to ambient
		Bending properties	Longitudinal guided bend; Tongue bend; Transverse free bend; Transverse guided bend; Transverse joggle-butt wrap around bend;	AS 2205.3.1, .3.2, .3.3, .3.4, .3.5	
	Prepared metallic test specimens	Fracture toughness	Crack tip opening displacement	BS 7448; AS 2205.7.3	Plane strain fracture toughness tests and crack opening displacement tests in bending mode, in the temperature range - 40°C to ambient
		Hardness	Brinell; Rockwell - Scale B; Rockwell - Scale C; Vickers;	AS 1816.1, AS 1815.1, AS 1817.1	Brinell - 4.9 to 29.4 kN Vickers - 9.8 to 980 N
		Bending properties	Transverse guided bend	AS 2505.1	
			Tensile tests		



## National Association of Testing Authorities, Australia

# SCOPE OF ACCREDITATION

		Through thickness		EN 10164; AS 3678; AS 1548	
		Through thickness			
		Tensile properties at elevated temperatures	Tensile tests with control of strain rate, including yield stress and proof stress	AS 2291	0.4 N to 500 kN at elevated temperatures in the range ambient to 600°C
		Tensile properties	Tensile tests with control of strain rate, including yield stress and proof stress	AS 1391, ASTM A370, E8	0.4 N to 500 kN
Material performance evaluation of paint and related products	Industrial coatings	Thickness	Microscopic examination	microscope	

### ISO/IEC 17025 (2017) Materials

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATION/RANGE
Metallic corrosion evaluation	Plating	Coating thickness	Microscopic examination	microscope	
		Coating mass; Coating thickness;	Dissolution - Strip, weigh and analytical; Gravimetric; Microscopic examination;	microscope ASTM A90	Weight of zinc coatings on ferrous articles Average thickness by strip and weigh methods
	Austenitic, duplex and nickel-chromium alloys; Chemical corrosion treatment materials; Copper and copper alloys; Ferrous	Pitting corrosion resistance	Corrodkote (CORR)	Corrosion resistance of stainless steels - pit depth (Method A) and mass loss to ASTM G48 AS 2331.3.7, ASTM B380	



## National Association of Testing Authorities, Australia SCOPE OF ACCREDITATION

	materials; Plating;				
		Salt spray resistance	Copper accelerated acetic acid salt spray (CASS); Neutral salt spray (NSS);	ASTM B368 and AS 2331.3.3 ASTM B117 and AS 2331.3.1	
Metallographic evaluation of metals and alloys	Ferrous materials	Assessment of grain boundary cementite		AS 1733, ASTM E112	
		Graphite type and distribution in cast irons	Microscopic examination	ISO 945-1	
		Depth of surface defects	Microscopic examination		
		Case depth and depth of decarburisation	Hardness traverse; Macroscopic examination; Microscopic examination;	AS 1982	
		Non-metallic inclusion content	Macroscopic examination; Microscopic examination;	AS 2087, ASTM E45	

| Accreditation Number: 561 | Site Number: 554 | Printed on : 24-Sep-2019

----- END OF SCOPE -----



ACCREDITED  
INSPECTION  
BODY



NATIONAL ASSOCIATION OF TESTING AUTHORITIES, AUSTRALIA  
has accredited:

**HRL Technology Group Pty Ltd**  
**Engineering Audits**

Following demonstration of its technical competence to operate in accordance with:

**ISO/IEC 17020**

as a Type A Inspection Body

This facility is accredited for the inspection activities shown on the Scope of Accreditation issued by NATA

**Jennifer Evans**  
Chief Executive Officer, NATA

Date of issue: 30 November 2021 | Date of Accreditation: 01 July 2005 | Accreditation number: 561 | Site number: 16028

The Commonwealth recognises NATA as a peak authority for the accreditation of inspection bodies. NATA is a signatory to the mutual recognition arrangements of the International Laboratory Accreditation Cooperation (ILAC) and the Asia Pacific Accreditation Cooperation (APAC) for inspection. (ABN 59 004 379 748) Limited by guarantee

AP8-1-11 / Issue 8 / October 2021



## Scope of Accreditation

### HRL Technology Group Pty Ltd

Site

#### Engineering Audits

Accreditation No.	Site No.	Date of Accreditation
561	16028	01 Jul 2005

Address	Contact	Availability
Unit 4, 677 Springvale Road Mulgrave, VIC 3170 Australia <a href="http://hrlt.com.au">hrlt.com.au</a>	Mr Richard Odgers P: +61(03)95659930 <a href="mailto:rodgers@hrl.com.au">rodgers@hrl.com.au</a>	Type A Inspection Body

#### Engineering Audits

##### ISO/IEC 17020 (2012)

Infrastructure and Asset Integrity

SERVICE	PRODUCT	DETERMINANT	PROCEDURE	LIMITATIONS
Pressure plant, pipelines and equipment - Design verification	Boilers; Fired pressure vessels; Gas cylinders; Pressure piping; Unfired pressure vessels	Design verification	AS 2030, AS 3920, AS 4041, AS 4343, AS/NZS 1200 (also covers relevant ASME Codes), EN 12953 (excluding CE mark provisions), EN 13445 (excluding CE mark provisions), EN 286.1, .2, .3, .4 NZ Code of Practice and similar Standards	Hazard levels: A, B, C, D, E Modelling using AS 1210 for finite element analysis of pressure equipment designs Covering the Churchill (Vic), Mulgrave (Vic) and Coopers Plains (Qld) offices

SERVICE	PRODUCT	DETERMINANT	PROCEDURE	LIMITATIONS
Pressure plant, pipelines and equipment - Fabrication inspection	Boilers; Fired pressure vessels; Pressure piping; Unfired pressure vessels	Fabrication inspection	AS 1210, AS 3920, AS 4037, AS 4041, AS 4458, AS 1228, EN 286.1, .2, .3, .4;	Hazard levels: A, B, C, D, E Covering the Churchill (Vic), Mulgrave (Vic) and Coopers Plains (Qld) offices
Pressure plant, pipelines and equipment - In-service inspection	Auxiliary vessels; Boilers; Buried or mounded pressure equipment; Compressed air containing vessels; Fired heaters or convection banks; Pressure piping; Pressure relief devices; Process vessels; Static low temperature vessels - Below -10 °C; Static storage vessels; Steam pressure vessels; Vessels with quick actuating closures; Water heaters	In-service inspection	AS/NZS 3788	Covering the Churchill (Vic), Mulgrave (Vic) and Coopers Plains (Qld) offices
	Boilers; Pressure piping	In-service inspection	WTIA Guidance Note 15 (GN - 15 Replication and in-situ Metallography)	Covering the Churchill (Vic), Mulgrave (Vic) and Coopers Plains (Qld) offices
Pressure plant, pipelines and equipment - Inspection	Pipes and hoses; Pressure equipment	Witnessing of hydrostatic tests	AS 4037 Section 17	Covering the Churchill (Vic), Mulgrave (Vic) and Coopers Plains (Qld) offices

#### Capability

Including Witnessing of Leak tests

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Accreditation No.

561

Site No.

16028

Print date

10 Oct 2022

END OF SCOPE

## Scope of Accreditation

issued by

**National Association of Testing Authorities, Australia**



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Pressure plant, pipelines and  
equipment - Inspection

Pressure equipment

Leak testing; Witnessing of hydrostatic tests

AS 4037 Section 17

### **Limitation / Range**

Covering the Morwell (Vic), Mulgrave (Vic) and Coopers Plains (Qld) offices

ACCREDITED  
LABORATORY



**NATIONAL ASSOCIATION OF TESTING AUTHORITIES, AUSTRALIA**  
has accredited:

**HRL Technology Group Pty Ltd**  
**Environment and Process**

Following demonstration of its technical competence to operate in accordance with:

**ISO/IEC 17025**

This facility is accredited for the tests shown on the Scope of Accreditation issued by NATA.

**Jennifer Evans**  
Chief Executive Officer, NATA

Date of issue: 19 January 2023 | Date of Accreditation: 30 September 1991 | Accreditation number: 561 | Site number: 14658

## Scope of Accreditation

### HRL Technology Group Pty Ltd

Site

#### Environment and Process

Accreditation No.	Site No.	Date of Accreditation
561	14658	30 Sep 1991

Address	Contact	Availability
Unit 4, level 1, 677 Springvale Road Mulgrave, VIC 3170 Australia <a href="http://hrlt.com.au">hrlt.com.au</a>	Mr Dale Jordan P: +61(03)95659817 <a href="mailto:djordan@hrl.com.au">djordan@hrl.com.au</a>	Services available to external clients

#### Environment and Process

##### ISO/IEC 17025 (2017)

Environment

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
Analysis for elements	Emissions - Industrial	Aluminium; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Calcium; Chromium; Cobalt; Copper; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Niobium; Phosphorus; Selenium; Silicon; Silver; Strontium; Sulfur; Thallium; Thorium; Tin; Titanium; Uranium; Vanadium; Zinc; Zirconium	Atomic fluorescence spectroscopy (AFS)- Cold vapour; ICP-AES	in-house method 1.19
Analysis for physical and chemical characteristics	Emissions - Stack	Chlorine; Hydrogen chloride	ICP-AES	USEPA Method 26
		Hydrogen fluoride	Ion selective electrode (ISE)	USEPA Method 26

##### ISO/IEC 17025 (2017)

Materials

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
Analysis of biofuels, hydrocarbon fuels and related fuel products	Gaseous fuels	Water dew point; Water vapour content	Dew point apparatus	in-house method WI-UC-101	
		Argon; Carbon dioxide (CO <sub>2</sub> ); Carbon monoxide; Helium; Hydrocarbons: C1-C7; Hydrogen; Hydrogen sulfide; Nitrogen; Oxygen	GC-FID; GC-TCD	In-house method WI-OC-086	
		Reformed gas analysis	GC-FID; GC-TCD	In-house method WI-UC-111	
		Odour	Odorimeter	In-house method WI-UC-118	
		Sulfur - Total	GC-PFPD	In-house method WI-OS-072	
	Gaseous fuels; Liquid fuels	Calorific value; Density; Vapour pressure; Wobbe index	Calculation	In-house method WI-UC-105	
	Liquefied petroleum gases (LPG)	Residue on evaporation	Gravimetric	in-house method WI-UC-102	
		Composition of gaseous fuels	GC-FID	In-house method WI-UC-086	
		Mercaptan sulfur	Titration	in-house method WI-UC-103	
	Refuse derived fuels (RDF)	Chlorine - Water soluble; Potassium - Water soluble; Sodium - Water soluble	ICP-AES	EN 15105:2011	
		Mechanical durability	Gravimetric	ISO 17831-1	
		Chlorine; Sulfur	ICP-AES	ISO 16994:2015	
		Bulk density	Gravimetric	ISO 17828	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
	Refuse derived fuels (RDF); Solid reclaimed fuels (SRF)	Particle size distribution	Classical	CEN/TS 15149-2 EN 16126:2012	
		Volatile matter	Gravimetric	ISO18123 EN 15402:2011	
		Biomass content	Accelerated oxidation method	EN 15440:2011	
		Calorific value	Bomb calorimeter	ISO DIS 18125 and EN 15400:2011	
		Aluminium; Antimony; Arsenic; Barium; Cadmium; Calcium; Chromium; Cobalt; Copper; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Phosphorus; Potassium; Selenium; Silicon; Sodium; Strontium; Sulfur; Thallium; Tin; Titanium; Vanadium; Zinc	ICP-AES	I.S EN ISO 16967:2015, I.S EN ISO 16968:2015, EN 15410:2011, DIN EN ISO 11885:2009, EN 15411:2011 and in-house Method 1.12	
		Carbon; Hydrogen; Nitrogen	Infrared (IR)	I.S EN 15407:2011 and I.S EN 16948:2015	
		Dimensions	Direct measurement; Gravimetric	ISO 17829	
		Moisture	Gravimetric	ISO 18134-2, CEN/TS15414-3:2010 and ISO 18134-3	
	Solid reclaimed fuels (SRF)	Aluminium - Metallic	ICP-AES	CEN/TS 15412	
		Ash	Gravimetric	ISO 18122 EN 15403:2011	



SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
		Bromine; Chlorine; Fluorine; Sulfur	ICP-AES; Ion chromatography (IC)	EN 15408:2011	
Analysis of coals, coke, charcoal and related products	Carbon black; Coal; Coke	Ash	Gravimetric	ISO 1171	
	Coal	Moisture - Total	Gravimetric	ISO 589	
		Ultimate analysis	Titration	AS 2434.6	
		Volatile matter	Gravimetric	AS 2434.2	
		Proximate analysis	Gravimetric	ISO 17246	
		Ash	Gravimetric	AS 2434. 8, in-house method 1.6	
	Coal; Coke	Volatile matter	Gravimetric	AS 1038.3 (2000) (Section 4 only), ISO 562 and in-house method 1.10	
		Sulfur - Total	Infrared (IR)	AS 1038.6.3.3 ISO 19579	
		Moisture	Gravimetric	AS 2434.7; ISO 579 ISO 11722 in-house method 1.6	
		Carbon; Hydrogen; Nitrogen	Carbon, hydrogen and nitrogen (CHN) analyser	AS 1038.6.4, ISO 29541 and in-house method 1.4	
	Chlorine	Titration	AS 1038.8.1 and in-house method 1.25		
		Aluminium; Barium; Calcium; Chromium; Cobalt; Copper; Iron; Magnesium; Manganese; Nickel; Phosphorus; Potassium; Silicon; Sodium; Strontium; Sulfur; Titanium; Vanadium; Zinc	ICP-AES	in-house method 1.12	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
		Relative density (specific gravity)	Density bottle	AS 1038.21.1.1; in-house method 1.23 - Relative density	
		Gross calorific value	Bomb calorimeter	AS 1038.5 (1998) ISO 1928	
		Aluminium; Barium; Calcium; Iron; Magnesium; Manganese; Phosphorus; Potassium; Silicon; Sodium; Strontium; Sulfur; Titanium; Zinc	ICP-AES	AS 1038.14.1 (2003)	
Chemical analysis of reagents, salts and related compounds	Aluminium sulfate	Antimony; Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Iron; Lead; Manganese; Mercury; Nickel; Phosphorus; Selenium; Silicon; Silver; Thallium; Tin; Vanadium; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP-AES	in-house method 1.18	
	Aluminium sulfate; Ammonia; Polyaluminium chlorohydrate	Turbidity	Nephelometry	APHA 2130	
	Aluminium sulfate; Ferric chloride; Ferric sulfate; Polyaluminium chlorohydrate	pH	Electrometric	APHA 4500 H <sup>+</sup> B	
	Aluminium sulfate; Hydrated alumina; Hydrochloric acid; Magnetite (iron ore); Polyaluminium chlorohydrate; Sulfuric acid	Fluoride	Ion selective electrode (ISE)	APHA 4500-F <sup>-</sup> Method C	
	Aluminium sulfate;	Colour	Visual comparison	APHA 2120B	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
	Polyaluminium chlorohydrate				
		Aluminium - Total (as alumina); Basicity; Specific gravity	Hydrometer; Titration	ANSI/AWWA B403-16	
	Aluminium sulfate; Polyaluminium chlorohydrate; Sodium hydroxide	Solids - Total suspended	Gravimetric	APHA 2540 Method D	
	Ammonia	Ammonia content; Specific gravity; Water content	Gravimetric; Hydrometer; Titration	United States Pharmacopoeia USP23: NF18 (1994)	
		Specific gravity	Gravimetric	APHA 2710 F	
	Atomised metallic aluminium	Antimony; Arsenic; Barium; Cadmium; Copper; Iron; Lead; Manganese; Mercury; Nickel; Selenium; Silver	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP-AES	in-house method 1.18	
	Bulk washed salt	Antimony; Cadmium; Chromium; Lead; Manganese; Mercury; Nickel	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP-AES	in-house method 1.18	
	Calcium hypochlorite	Aluminium; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chloride; Chromium; Copper; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Selenium; Silicon; Silver; Strontium; Sulfur; Thallium; Tin; Titanium; Vanadium; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP-AES	in-house method 1.18	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
		Chlorine - Available	Titration	ANSI/AWWA B300-10	
	Ferric chloride	Aluminium; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chloride; Chromium; Cobalt; Copper; Iron; Lead; Manganese; Mercury; Molybdenum; Nickel; Phosphorus; Selenium; Silver; Titanium; Vanadium; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP-AES	in-house method 1.18	
		Ferrous chloride; Free acid - As hydrochloric or sulfuric; Iron - Ferric; Iron - Ferrous; Solids - Suspended; Specific gravity	Gravimetric; Hydrometer; Titration	ANSI/AWWA B407-12	
	Ferric chloride; Magnetite (iron ore)	Cyanide	UV-vis spectrophotometry	APHA 4500-CN	
	Ferric sulfate	Ferrous chloride; Free acid - As hydrochloric or sulfuric; Iron - Ferric; Iron - Ferrous; Solids - Suspended; Specific gravity	Gravimetric; Hydrometer; Titration	ANSI/AWWA B406-14	
		Antimony; Arsenic; Cadmium; Chloride; Chromium; Copper; Iron; Lead; Manganese; Mercury; Nickel; Selenium; Silver; Vanadium; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP-AES	in-house method 1.18	
	Hydrated alumina	Antimony; Arsenic; Barium; Cadmium; Chromium;	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS)	in-house method 1.18	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
		Copper; Iron; Lead; Manganese; Mercury; Nickel; Selenium; Silver	- Cold vapour; ICP- AES		
	Hydrochloric acid	Antimony; Arsenic; Barium; Cadmium; Chromium; Copper; Lead; Manganese; Mercury; Nickel; Selenium; Silver	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
		Acidity	Titration	APHA 2310	
	Magnetite (iron ore)	Antimony; Arsenic; Barium; Cadmium; Chromium; Copper; Lead; Manganese; Mercury; Nickel; Selenium; Silver	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
	Permanganates	Potassium permanganate	Titration	ANSI/AWWA B603-16	
		Aluminium; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Copper; Iron; Lead; Mercury; Molybdenum; Nickel; Selenium; Silver; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
	Polyaluminium chlorohydrate	Antimony; Arsenic; Barium; Cadmium; Chloride; Chromium; Copper; Iron; Lead; Manganese; Mercury; Nickel; Selenium; Silver	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
	Soda ash	Apparent density; Sodium carbonate	Gravimetric; Titration	ANSI/AWWA B201-13	
		Antimony; Arsenic; Barium; Chromium;	Atomic absorption spectroscopy (AAS); Atomic absorption	in-house method 1.18	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
		Copper; Lead; Manganese; Mercury; Nickel	spectroscopy (AAS) - Cold vapour; ICP- AES		
	Sodium hydroxide	Alkalinity; Sodium carbonate; Sodium hydroxide	Titration	ANSI/AWWA B501-13	
		Aluminium; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Copper; Iron; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Silver; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
	Sodium hypochlorite	Aluminium; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chloride; Chromium; Copper; Iron; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Silver; Zinc	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
		Alkalinity; Chlorine - Available	Titration	ANSI/AWWA B300- 10	
	Sulfuric acid	Sulfuric acid	Titration	ASTM E223	
		Antimony; Arsenic; Barium; Cadmium; Chromium; Copper; Iron; Lead; Magnesium; Manganese; Mercury; Nickel; Selenium; Silver	Atomic absorption spectroscopy (AAS); Atomic absorption spectroscopy (AAS) - Cold vapour; ICP- AES	in-house method 1.18	
Safety evaluation for transport	Bulk combustible materials	Flammable gas emission rate	Not applicable	ST/SG/AC.10/11 United Nations Recommendations on the Transport of	

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE	LIMITATIONS
of bulk materials				Dangerous, Goods - Manual of Tests and Criteria Test 33.4.1 Substances which in contact with water emit flammable gases	
		Temperature rise of readily combustible solids due to self heating	Not applicable	ST/SG/AC.10/11 United Nations Recommendations on the Transport of Dangerous; Goods - Manual of Tests and Criteria Test 33.3.1.3.3 Self heating substances	
		Burning rate	Not applicable	ST/SG/AC.10/11 United Nations Recommendations on the Transport of Dangerous, Goods - Manual of Tests and Criteria Test 33.2.1.4 Test method for Readily combustible solids	
Sample collection	Gases and aerosols	Not applicable	Sample cylinders; Tedlar bags	in-house method WI-UC-106	

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Accreditation No.	Site No.	Print date
<b>561</b>	<b>14658</b>	<b>23 Jan 2023</b>

**END OF SCOPE**